

Impact of Aldicarb-Citrus Uses on NMC CRA Dietary Exposures

- Aldicarb was included in the 2007 *N*-Methyl Carbamate Cumulative Risk Assessment (NMC CRA)
 - Common mechanism group based on acetyl cholinesterase (AChE) inhibition
- Relative potency factor (RPF) approach employed to adjust for differences in toxicity
 - RPF calculated as ratio of benchmark dose response of 10% (BMD₁₀) inhibition of brain AChE
 - Index chemical for carbamates was oxamyl (i.e., RPF = 1) based on BMD₁₀ = 0.24 mg/kg/day
 - Aldicarb RPF = 4 based on BMD₁₀ = 0.06 mg/kg/day
 - Aldicarb interspecies UF = 2 based on human study
 - Aldicarb FQPA SF = 2 based on comparative cholinesterase study
- Multi-chemical assessment which avoids exposure assumption that compound conservatism
 - Non-detectable residues in food assumed to be zero
 - No default processing factors > 1 (no assumed magnification of residues through processing)
- USDA Pesticide Data Program (PDP) found significant number of detectable residues of aldicarb or its metabolites in grapefruit and orange juice
 - 1462 grapefruit samples from 2005-2006 with concentrations <= 0.063 ppm
 - 2879 orange juice samples from 1997-1998 & 2004-2006 with most concentrations <= 0.008 ppm
- For children 1-2 years old, the relative contribution from orange juice to upper percentile exposures was not large

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Commented [MD1]: Be sure this was brain.

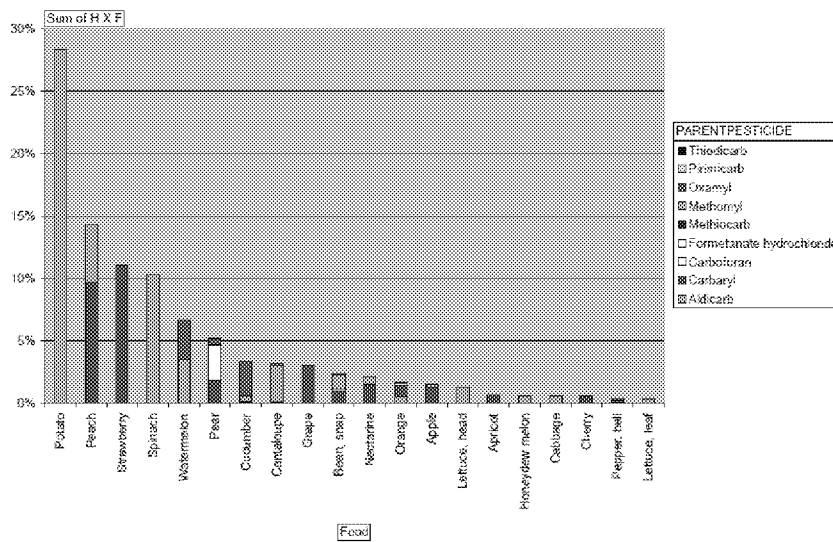
Commented [VP2R1]: The endpoint for the PoD was brain, but some uncertainty factor information was based on RBC. So I just removed it.

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Commented [MD3]: Can you give upper limits of concentrations . And about how many samples. Which years used?

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Figure I.C-1. Relative Contribution of Crop/Chemical Pairs to Top 0.2 Percentile of Cumulative Distribution for Children 1-2



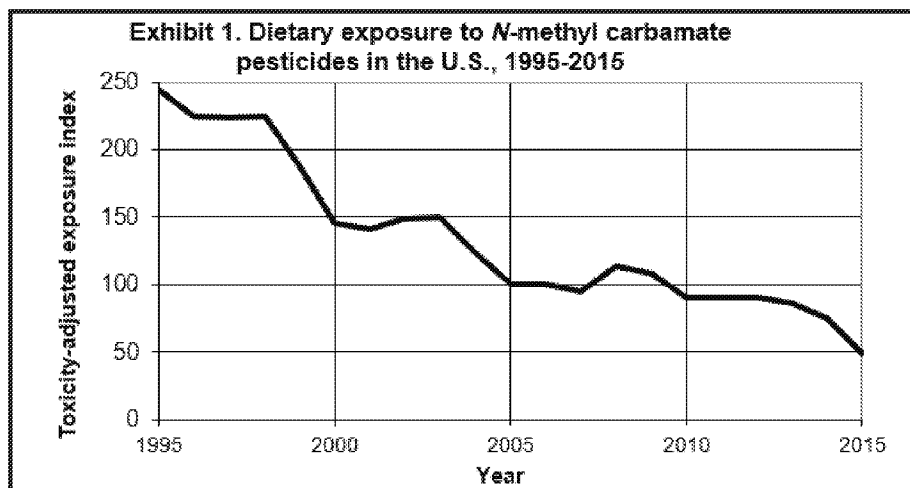
- Draft Report on the Environment (ROE) indicator based on 2007 NMC CRA toxicity data and RPFs indexes NMC dietary exposure to 100 for the baseline year 2006
- Exposure to NMCs through food decreased ~50% from 2006 to 2015 based on reduction in residues observed in PDP data possibly due to mitigation actions and cancellations

Commented [MD4]: What is baseline and baseline year.

Commented [MD5]: Some have commented we can't know this. maybe other reasons (economic)

Commented [VP6R5]: Does possibly help or just delete it?

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- including-PDP residues on orange (2005), orange juice (2005), and grapefruit (2006) for years with the highest residue were included in ROE indicator and did not significantly impact exposure (~0.1%) at the 99.9th percentile of exposure for children 1-2 years old
- Comparing endpoints and uncertainty & safety factors between the 2016 single chemical assessment and the 2007 NMC CRA, aldicarb would be considered 3.6 times more toxic
 - BMD₁₀ (mg/kg/day): 0.06 (CRA) vs 0.03 (single-chemical assessment)
 - FQPA SF: 2 (CRA) vs 4.8 (single-chemical assessment)
 - Interspecies UF: 2 (CRA) vs 1 (single-chemical assessment)
- Percent crop treated (PCT) for oranges and grapefruit could be as high as 35% and 55% respectively based on 2014 screen level usage assessment
- Based on sensitive toxicity endpoint in 2016 single-chemical assessment, ½ LOD values may results in high exposure estimates

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Commented [MD7]: I don't know what this means

Commented [VP8R7]: Hopefully that is clearer.

Commented [MDW]: clearly responsible for? Something else? Did we use PCT?

Commented [VP10R9]: No, not responsible for CRA exposure, but might impact any single-chemical assessment